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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,550	01/28/2002	Zhaoyun Xing	004-5620	3758

22120 7590 03/29/2004

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EXAMINER

DINH, PAUL

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/058,550

Applicant(s)

XING ET AL.

Examiner

Paul Dinh

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,14-17 and 23-26 is/are rejected.
- 7) ☒ Claim(s) 3-13,18-22 and 27-29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This is a response to the amendment + remarks filed on 2/20/04. The applicant remarks are not persuasive; therefore the previous rejections based on Carothers are retained. This office action is final, see the following details.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 14-17, 23-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Carothers et al. (USP 6353918) who discloses a method/product/graph comprising:

(Claim 1 and similarly recited claims 15-16, 24)

generating a plurality of subgraphs, wherein individual ones of the plurality of subgraphs correspond to respective ones of a plurality of layers of circuitry (fig 16, 24, 35, 37), the individual subgraphs including a plurality of segments based on information from other (routing/circuit) layers of the circuitry (fig 5, 17-36, col 15-16); and

combining all of the plurality of subgraphs into a single multi layer graph (fig 1, 17-26, 33-35, col 1, 4).

(Claims 2, 17, 26) intersection points of all the segments from other layers (fig 12-35)

(Claim 14) IC made is just an intended used. Just for the applicant information, background, figure 1 teaches IC made/designed.

(Claims 23, 25) program/software/storage/medium/disk/tape/computer readable and internet/network in claims 23, 25 are merely intended uses and/or inherent apparatus in a computer/workstation/CAD/ECAD/EDA/design/layout system/platform environment. Just for the applicant information, fig 31 substantially teaches these intended uses.

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**Response to Applicant Remarks**

The applicant states that the compatibility graph of Carothers fails to teach or suggest **“subgraphs including a plurality of segments based on information from other layers of the circuitry”**.

Here is the examiner answer:

Carothers discloses **compatibility graphs** (i.e., fig 5, 16, 24C, 32, etc., that the examiner interprets as the claimed **subgraphs**) includes a plurality of **(routing) segments** (col 10 lines 21-39, fig 35A (note that segments as edges, edges correspond to segments) **based on information from other layers of the circuitry**). (Col 15-16 teach (routing) segments based on information from other layers of the circuitry, i.e.,

Col 15 lines 32-34 teaches “reroute nets (which includes routing segments/edges/lines) originally routed on a first layer pair (first 2 layers) to a second layer pair (second 2 layers) to balance the route density among the various layer pairs” because “a first layer pair maybe extremely densely packed with routes, while a second layer pair contains only half as many” and “upper layer pairs tend to have very high routing density and lower layer pairs have excess area” (col 15 lines 23-27). Thus Carothers clearly teaches (routing) segments based on information from other layers of the circuitry as claimed.

Furthermore, col 15 lines 58-61 teaches “subjecting each layer pair to redundant routing for nets (which includes routing segments/edges/lines) originally routed on other layer pairs results in some net having multiple candidate route, each of which is on a different layer pair”. Thus Carothers clearly teaches (routing) segments based on information from other layers of the circuitry as claimed.

**Allowable Subject Matter**

Claims 3-13, 18-22, 27-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3-13, 18-22, 27-29 would be allowable because the prior art does not teach or suggest the limitation in claim 3, lines 3-12 and similarly recited claim 18, lines 3-14, claim 27 lines 3-12.

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*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is 571-272-1890. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax number for the organization handling this application is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Paul Dinh  
Patent Examiner

  
**VUTHE SIEK**  
**PRIMARY EXAMINER**